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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:

David P. Tong

Serial No.: 09/546,993

Filed: April 11, 2000

For: **METHOD AND COMPUTER
PROGRAM PRODUCT FOR
REDUCING COLORMAP
FLASHING**

Art Unit: 2672

Examiner: Faranak Fouladi-Semnani

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APPELLANT'S BRIEF UNDER 37 CFR 1.192

I. Real Party in Interest

Sun Microsystems, Inc.
4120 Network Circle
Santa Clara, CA 95054
USA

II. Related Appeals and Interferences

No other appeals or interferences are currently known to Appellant that will directly affect, be directly affected by, or have a bearing on the decision to be rendered by the Board of Patent Appeals and Interferences in the present appeal.

III. Status of Claims

Claims 1 and 3-8 are pending in the application. Original claim 2 was cancelled. No claims have been allowed. Claims 6 and 8 stand rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,703,627 to Young. Claims 1,

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3-5, and 7 stand rejected under 35 U.S.C. §103 as being unpatentable over Young further in view of U.S. Patent No. 5,406,310 to Aschenbrenner. On May 30, 2003, Appellant appealed from the final rejection by filing a Notice of Appeal of all pending claims 1 and 3-8.

IV. Status of Amendments

In response to the Final Office Action mailed March 25, 2003, Appellant amended claims 1, 3, and 6-8 and cancelled claim 2. In an Advisory Action mailed April 29, 2003, it was indicated that the amendments were entered and claim 2 was withdrawn from consideration. Therefore, claims 1 and 3-8, as amended in the Amendment and Response to Final Office Action mailed April 14, 2003, remain in the application for consideration in this appeal.

V. Summary of the Invention

Briefly, the invention is directed toward a method, and associated system, for preventing colormap flashing by simulating allocation of a private colormap without actually ever developing or creating such a private colormap. As discussed at page 8, lines 1-23 of the specification, colormap flashing in prior art devices occurs when a switch is made between a default colormap and a private colormap.

The invention does not use or allocate a private colormap. This is indicated in the system of Figure 2 which shows the use of a secondary lookup table 12 along with a default colormap 14 to respond to an application 16 requesting a private colormap to control the display 18 without flashing. The claimed method is described with reference to Figures 4 and 5, and as stated at page 13, lines 16-19, the method enables satisfaction of a request for allocation of a private colormap to be satisfied “without having to overwrite or ‘switch out’ the default colormap from the frame buffer” and in this manner, “colormap flashing is eliminated.”

As discussed in the specification at page 10, lines 13-19 with reference to Figure 4B, simulating allocation of a private colormap “involves transparently using a secondary lookup table...having entries which are mapped to the entries of the default colormap. This secondary lookup table is used so that the application

program... 'believes' that it is still properly obtaining an allocated private colormap for its use, however, in actuality the default colormap is utilized." Referring to the specification at page 10, lines 19-23 with reference to Figure 4B, colormap flashing is prevented since in the method of the invention the "default colormap is retained in the frame buffer, rather than being swapped out. Instead of returning a 'private' colormap, the software returns a reference to the default colormap and then provides functionality so that the default colormap behaves like a private colormap."

From Figure 4B, it can be seen the method involves an application requesting a color allocation in a default colormap. As described at page 11, lines 2-10 with reference to Figure 4B, if the application attempts to allocate a read-only color the cell can be shared with other applications typically by returning a closest match from the default colormap. Referring to Figure 5 at step 500, if a read-only cell is not requested, i.e., a private cell is requested at 504 that should not be shared, the method continues at 506 with providing a secondary lookup table. The allocation and mapping to the default colormap is described further at page 12, lines 3-22 of the specification. Several cells in the "simulated private colormap" may map to the same entry in the default colormap leading the application to believe the cells contain different colors.

At step 510 and as described at page 12, line 22, if there is no space available in the default colormap for a private color, then step 514 is performed to provide a closest match of the requested private color to a previously-stored read-only color. After associating the cell of the secondary look up table with the location of a cell in the default colormap, step 518 is performed to return the location of the cell to the requesting application as a reference to the secondary lookup table (see also the specification at page 13, lines 9-15). In this manner, private color allocation requests are satisfied without creation of a private colormap, which avoids the need for switching between a private colormap and the default colormap that can cause flashing.

VI. Issues

1. Whether claims 6 and 8 are unpatentable under 35 U.S.C. §102(b) over Young (U.S. Patent No. 5,703,627).
2. Whether claims 1, 3-5, and 7 are unpatentable under 35 U.S.C. §103(a) over Young in view of Aschenbrenner (U.S. Patent No. 5,406,310).

VII. Grouping of Claims

The following groups of claims do not stand or fall together.

Rejection under 102(b):

Group I: claim 6; and

Group II: claim 8.

Rejection under 103(a):

Group III: claim 3;

Group IV: claim 1, 4, and 5; and

Group V: claim 7.

VIII. Argument

A. Rejection of Claims 6 and 8 under 102(b) based on Young is Improper

Independent claim 6 calls for a method that includes, among other things, “transparently simulating the allocation of the private colormap using a default colormap.” Significantly, the simulating includes “allocating a secondary lookup table comprising entries mapped to entries in the default colormap.” Young does not teach simulating a private colormap (rather than actually creating one) including allocating a secondary lookup table with entries mapped to entries in a shared default colormap. Accordingly, Appellant requests that the rejection of claim 6 (Group I) under 35 U.S.C. § 102 over Young be withdrawn.

In the Final Office Action mailed March 25, 2003, claim 6 was rejected based on Young, which (on page 4 of the Office Action) was said to disclose the claimed invention at col. 6, lines 57-62, col. 5, lines 2-5, and the Abstract at lines 1-28. The Office Action further stated that “Young also discloses in col. 5 lines 57-62 that color

values from private color map being copied into free cells of a shared default map.” Additionally, in the last line of the Advisory Action, it is stated that “Young discloses the creation of a colormap for private use” and in “addition there is no detail on any differences between a secondary lookup table and a private colormap in the specification and furthermore these two name [sic] represent the something [sic] in the art.”

Appellant agrees that Young teaches use of private colormaps, but Appellant disagrees that a private colormap and use of a secondary lookup table are equivalents. The difference between the use of a private colormap and simulating a private colormap using the default colormap is an important element of the described and claimed invention used to prevent colormap flashing. As defined at page 3, lines 1-2 of the specification, a “private colormap” provides a client device a “full set of 256 cells that are not shared with any other client” and which is stored in the frame buffer. In contrast, simulating a private colormap is performed according to claim 6 by allocating a secondary lookup table mapped with entries in the default colormap, i.e., a location or reference to a cell in the default colormap is stored in the secondary lookup table rather than a color value as would be the case in a private colormap. As noted at page 10, line 14, the secondary lookup table can be stored in conventional memory. During operation 516 of Figure 5, a cell in the secondary lookup table is associated or mapped with the location of the cell from the default colormap and a private color value is not actually stored in the cell as would be the case for a private colormap. Often, a closest match is used and mapped to the secondary lookup table rather than assigning a new color or color value as would be the case with a private colormap. As a result, there will not be a difference between colors in the simulated private colormap (which points to default colormap cells) and colors in the default colormap, which avoids flashing during colormap switching.

More specifically, Young at the citations provided by the Examiner does not teach simulating the allocation of the private colormap using a default colormap including allocating a secondary lookup table comprising entries mapped to entries in the default colormap as called for in claim 6. The Abstract of Young makes it clear that Young is attempting to solve the flashing problem by making the default

colormap contain the same color values as private colormaps (e.g., at line 11 “Since the default colormap’s copied cells are the same as corresponding cells in the private map they do not flash...”). This is achieved by a process labeled “residual color allocation” to fill unallocated cells in the default colormap with color values allocated to private colormap cells. Young was also cited at col. 5, lines 2-5, but at this point, Young is again discussing the residual color allocation method of minimizing flashing “by copying color values from a private color map into free cells of a shared default map.” Young is not teaching that a creation of a private colormap should be avoided and is not teaching or suggesting that it may be useful to provide references to the cells in a default colormap to an application such that a number of applications are all using the default colormap. The Examiner further cited Young at col. 6, lines 57-62, but Young at this point is merely discussing the use of color allocation and default colormap sharing with no discussion of the use of a secondary lookup table “comprising entries mapped to entries in the default colormap.” Claim 6 is not anticipated by Young because all of the elements of the claimed method are not taught.

As with claim 6, independent claim 8 calls for transparently simulating the allocation of a private colormap using a default colormap including allocating a secondary lookup table. However, claim 8 (Group II) is believed to be separately patentable relative to claim 6 (Group I) because claim 8 calls for the secondary lookup table to store “information received from the application program relating to the intercepted request.” A further patentable difference is that the allocation simulating “includes associating a cell in the secondary lookup table with a location of a cell in the default colormap and returning the location of the cell in the default colormap to the application program as a response to the intercepted request.” These limitations are not called for in claim 6 yet they further distinguish the method of claim 8 from the teaching of Young.

In the Final Office Action, claim 8 was rejected under 35 U.S.C. §112. In the Advisory Action, the §112 rejection was held to be overcome, but claim 8 was then rejected under §102(b) as being anticipated by Young. An element-by-element analysis was not provided but instead Young was cited generally at col. 5, lines 2-25

and Abstract lines 1-28. Appellant does not believe Examiner has met the burden required for making a proper anticipation rejection. Further, as discussed with reference to claim 6, Young does not teach simulating the allocation of a private colormap but instead in the Abstract discusses how cell contents of a created private colormap can be copied into the default colormap. Also, at col. 5, lines 2-25, Young provides a further description of how color values in the cells of private and default colormaps can be maintained to be the same to control flashing. No teaching of a secondary lookup table is provided in Young. Accordingly, Appellant requests that the rejection of claim 8 (Group II) under 35 U.S.C. § 102 over Young be withdrawn.

More particular to claim 8, Young does not teach that simulating a private colormap may include “storing information received from the application program relating to the intercepted request.” The Examiner has not provided a specific citation for this claim element in Young and the citations provided merely discuss copying private color values into free cells in a default colormap. Further, Young clearly does not teach returning the location of a cell in a default colormap to an application program as a response to a request for an allocation of private colormap. In contrast, Young (for example, in the Abstract) teaches allocating a private colormap in response to such a request (and then proceeding to modify the default colormap). For this additional reason, it is believed that claim 8 is not anticipated by Young.

B. Rejection of Claims 1, 3-5, and 7 under 103(a) based on Young in view of Aschenbrenner Improper

Independent claim 3 calls for a computer program product that includes, among other things, computer readable code devices to cause a computer to effect transparently simulating the allocation of the requested private colormap “by providing a reference to a cell in a default colormap” “whereby creation of and swapping to the requested private colormap are not performed.” Young alone (or in combination with Aschenbrenner) fails to teach or make obvious simulating a private colormap by providing a reference to a cell in a default colormap to avoid swapping and flashing. Accordingly, Appellant requests that the rejection of claim 3 (Group III) under 35 U.S.C. § 103 over Young be withdrawn.

In the Final Office Action, claim 3 was rejected as reciting a computer-

readable medium for executing the method of claim 1, which would have been obvious to one skilled in the art to port the method to other computer systems. In rejecting Claim 1, Young was cited at col. 6, lines 57-62, col. 5, lines 2-5, and the Abstract lines 1-28 (again, without an element analysis of where each element is taught by Young). Aschenbrenner is cited for the idea of "closest matching" so does not appear to be relevant to the rejection of claim 3.

As discussed with reference to claims 6 and 8, the Abstract of Young makes it clear that a private colormap is created for a requesting application. This is in direct contrast to the limitations of claim 3 "whereby creation of...private colormap are not performed." Further, at the other cites, Young teaches a residual color allocation in which color values of a private colormap are copied into unallocated cells of a shared default colormap. There is no teaching of "providing a reference to a cell in a default colormap" as called for in claim 3. Because a private colormap is created in Young for storing color values there would be no reason or motivation to return a reference to the default colormap to an application requesting allocation of a private colormap (instead you would simply respond by creating the private colormap and allocating new colors). Because each feature of claim 3 is not taught or even suggested by Young, claim 3 is believed to be non-obvious in light of the reference and allowable.

Independent claim 1 is similar to claim 3 in calling for a method that involves simulating the allocation of a private colormap and is believed allowable over Young for the reasons provided for claim 3. Claim 1 is also believed to be separately patentable relative to claim 3 because it includes a number of specific steps in the simulating of the allocation of the private colormap not required in claims 3 and not shown in Young or Aschenbrenner.

Specifically, claim 1 calls for the simulating to includes: storing the secondary lookup table information received from said application program relating to one or more requested colors privately allocated by the application program; performing a closest match of said requested color to a color stored in the default colormap; and returning the closest match to the application program. The combination of these elements is not shown or even suggested in Young in view of Aschenbrenner. Hence, Appellant requests that the rejection of claim 1, as well as

dependent claim 5 and claim 4 which depends from claim 3 but has limitations similar to claim 1 (i.e., Group IV), under 35 U.S.C. § 103 over Young in view of Aschenbrenner be withdrawn.

In the Advisory Action, Young was cited at col. 5, lines 2-25 and Abstract lines 1-28 for teaching the claimed feature of simulating allocating a private colormap using a default colormap including allocating a secondary lookup table for storing information received from the application. As discussed with reference to claims 3, 6, and 8, Young provides no teaching in the Abstract, at col. 5 lines 2-25, or elsewhere of allocating a secondary lookup table as part of simulating allocation of a private colormap. Instead, Young teaches actual creation of a private colormap for an application not its simulation. Further, as discussed relative to claim 8, Young fails to teach or suggest storing information received from the application as part of the allocation process. Because the method of claim 1 is not obvious in light of Young, claim 1 is believed allowable.

In the Advisory Action, Aschenbrenner was cited at col. 6 lines 22-31 and col. 6 lines 48-51 for teaching the finding of a closest match of a requested color in a default colormap. It was then asserted by the Examiner that it would be obvious to modify Young with the teaching of Aschenbrenner to arrive at the method of claim 1. Appellant argues that Aschenbrenner fails to overcome the shortcomings of Young. Specifically, Aschenbrenner does not teach the use of a secondary lookup table to simulate allocation of a private colormap, and thus, the combination cannot teach or suggest all the elements of claim 1.

Additionally, in the closest color set process described in Aschenbrenner at col. 6, lines 22-31, the user must select or choose the closest color routine which causes the process to be visible or not transparent. According to Aschenbrenner, image colors that cannot be loaded into a default table that were requested by an application program are compared against the colors in the default table and then the closest match is "substituted for the unloaded color" and then, according to Figure 5, the default table is transferred to the display table. There is no teaching of returning the closest match results to the requesting application as required in claim 1. Hence, claim 1 is believed allowable because at least the closest match and closest match

returning portions of the allocation simulating are not shown or made obvious by the combination of Young and Aschenbrenner.

Claim 5 depends from claim 1 and is believed allowable for at least the reasons for allowing claim 1. Claim 4 depends from claim 3 but also has limitations similar to claim 1 and is, thus, believed allowable for the reasons for allowing claims 1 and 3.

Claim 7 (Group V) depends from claim 1 and is believed allowable for the reasons provided for allowing claim 1. Further, claim 7 is believed separately patentable. Claim 7 provides additional protection for the inventive idea of treating read-only color cell requests differently than other requests. Young and Aschenbrenner do not show this feature nor would it be obvious to one skilled in the art how to modify their teachings to obtain the claimed invention. According to the invention (see, for example, Figures 4B and 5) and claim 7, if a client requests a read-only color then a closest match is performed rather than allocating the requested color (by taking up unallocated cell in the default map). Accordingly, Appellant requests that the rejection of claim 7 (Group V) under 35 U.S.C. § 103 over Young in view of Aschenbrenner be withdrawn.

More specifically, claim 7 calls for determining whether the requested color was for a read-only color cell. If for a read-only request, skipping the storing step and performing the closest match and returning the results. If not for a read-only request, performing the storing if space is available otherwise performing the closest match and returning the results. In the Advisory Action, Aschenbrenner was cited (again at col. 6 lines 22-31 and col. 6 lines 48-51) for teaching closest color matching. It was then argued that it would have been obvious to modify Young with Aschenbrenner's teaching "to be able to always find a color for the image colors even if the colormap is full."

However, claim 7 is directed to more than just finding a color when a default colormap is full. Claim 7 requires that a simulation of a private colormap be performed in a manner that treats read-only requests differently from other requests. In the claimed method, the default colormap is used and "private" colors may be


stored if space is available otherwise a closest match and simulation is performed. The Examiner has not pointed to anything in Young or Aschenbrenner that discusses that read-only requests and non-read-only requests are treated differently. For this additional reason, claim 7 is believed allowable over Young and Aschenbrenner.

Conclusion

In view of all of the above claims 1 and 3-8 are believed to be allowable and the case in condition for allowance and it is respectfully requested that the Examiner's rejections be overturned.

Respectfully submitted,

Date: June 26, 2003

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IX. APPENDIX OF CLAIMS ON APPEAL

1. A method of reducing colormap flashing on a display system, the display system having a frame buffer which provides a single hardware colormap, the method comprising the steps of:

intercepting a request from an application program for an allocation of a private colormap; and

transparently simulating the allocation of the private colormap using a default colormap, wherein the default colormap is retained in the frame buffer during the simulating and the simulating includes allocating a secondary lookup table for storing information received from the application program relating to the intercepted request; and

wherein said step of transparently simulating the allocation of a private colormap further comprises:

storing in the secondary lookup table information received from said application program relating to one or more requested colors privately allocated by said application program;

performing a closest match of said requested color to a color stored in said default colormap; and

returning said closest match to said application program.

2. (cancelled)

3. A computer program product, comprising:
a computer usable code storage medium;
computer readable code embodied in said storage medium for reducing colormap flashing on a display system, the display system having a single hardware colormap, the computer readable code comprising:

computer readable code devices to cause a computer to effect intercepting a request from an application program for an allocation of a private colormap; and

computer readable code devices to cause a computer to effect transparently simulating the allocation of the requested private colormap by providing a reference to a cell in a default colormap and retaining the default colormap in a buffer, whereby creation of and swapping to the requested private colormap are not performed by the computer program product.

4. The computer program product of claim 3, wherein said computer readable program code devices configured to cause a computer to effect transparently simulating the allocation of a private colormap further comprises:

computer readable code devices to cause a computer to effect allocating a secondary lookup table for storing information received from said application program relating to one or more requested colors privately allocated by said application program;

computer readable code devices to cause a computer to effect performing a closest match of said requested color to a color stored in said default colormap; and

computer readable code devices to cause a computer to effect returning said closest match to said application program.

5. The method of claim 1, comprising the step of determining whether a private color cell has been requested by the application program and writing said private color cell to the default colormap.

6. A method for reducing colormap flashing on a display system, the display system having a frame buffer which provides a single hardware colormap, the method comprising the steps of:

intercepting a request from an application program for an allocation of a private colormap;

transparently simulating the allocation of the private colormap using a default colormap, wherein the simulating includes allocating a secondary lookup table comprising entries mapped to entries in the default colormap; and

determining whether a private color cell has been requested by the application program and writing said private color cell to the default colormap.

7. The method of claim 1, further including prior to performing the storing, determining whether the requested color was for a read-only color cell, when determined not a read-only request, performing the storing and only performing the performing the closest match and the returning when a space is not available in the

default colormap, and when determined a read-only request skipping the storing and performing the performing the closest match and the returning the closest match.

8. A method of reducing colormap flashing on a display system, the display system having a frame buffer which provides a single hardware colormap, the method comprising the steps of:

intercepting a request from an application program for an allocation of a private colormap; and

transparently simulating the allocation of the private colormap using a default colormap, wherein the default colormap is retained in the frame buffer during the simulating and the simulating includes allocating a secondary lookup table for storing information received from the application program relating to the intercepted request;

wherein the simulating includes associating a cell in the secondary lookup table with a location of a cell in the default colormap and returning the location of the cell in the default colormap to the application program as a response to the intercepted request.